

Applicant: Kaisa Putkisto et al.
PCT App. No.: PCT/FI03/00180

Claim Listing

1–4. (cancelled)

5. (new) A method for coating a paper or board web in a dry surface treatment process comprising the steps of:

pre-charging particles of a dry powder by causing the dry powder to move between a first electrode producing a corona charge and an electrode at a lower or opposite potential to form pre-charged particles;

supplying the pre-charged particles to a feeding nozzle forming an electrode and blowing the pre-charged particles from the feeding nozzle toward the paper or board web, the feeding nozzle being positioned between a second electrode producing a corona discharge upstream of the feeding nozzle and a third electrode producing a corona discharge downstream of the feeding nozzle, wherein the feeding nozzle is spaced from the paper or board web a first distance, and wherein the second electrode and the third electrode are spaced from the paper or board web a distance which is less than the first distance; wherein the paper or board web is backed by a grounding electrode at a potential which is lower than or opposite to the potentials of the feeding nozzle, the second electrode, and the third electrode, and wherein the feeding nozzle, the second electrode, and the third electrode are located on a side of the paper or board web opposite the grounding electrode.

6. (new) The method of claim 5 wherein the grounding electrode is a rotatable roll.

7. (new) The method of claim 7 wherein the grounding electrode is a stationary platy electrode.

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8. (new) A method for coating a paper or board web in a dry surface treatment process comprising the steps of:

pre-charging particles of a dry powder by causing the dry powder to move along the walls of a transfer pipe to charge the particles by triboelectric charging; supplying the pre-charged particles to a feeding nozzle forming an electrode and blowing the pre-charged particles from the feeding nozzle toward the paper or board web, the feeding nozzle being positioned between a first electrode producing a corona discharge upstream of the feeding nozzle and a second electrode producing a corona discharge downstream of the feeding nozzle, wherein the feeding nozzle is spaced from the paper or board web a first distance, and wherein the first electrode and the second electrode are spaced from the paper or board web a distance which is less than the first distance; wherein the paper or board web is backed by a grounding electrode at a potential which is lower than or opposite to the potentials of the feeding nozzle, the first electrode, and the second electrode, and wherein the feeding nozzle, the first electrode, and the second electrode are located on a side of the paper or board web opposite the grounding electrode.

9. (new) The method of claim 8 wherein the grounding electrode is a rotatable roll.

10. (new) The method of claim 8 wherein the grounding electrode is a stationary platy electrode.

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11. (new) A method for coating a dry surface treatment process comprising the steps of:
 - pre-charging particles of a dry powder by causing the dry powder to move between a first electrode producing a corona charge and an electrode at a lower or opposite potential to form pre-charged particles;
 - supplying the pre-charged particles to a feeding nozzle forming an electrode and blowing the pre-charged particles from the feeding nozzle toward the web, the feeding nozzle being positioned between a second electrode producing a corona discharge upstream of the feeding nozzle and a third electrode producing a corona discharge downstream of the feeding nozzle, wherein the feeding nozzle is spaced from the web a first distance, and wherein the second electrode and the third electrode are spaced from the web a distance which is less than the first distance;
 - wherein the web is backed by a grounding electrode at a potential which is lower than or opposite to the potentials of the feeding nozzle, the second electrode, and the third electrode, and wherein the feeding nozzle, the second electrode, and the third electrode are located on a side of the web opposite the grounding electrode.
12. (new) The method of claim 11 wherein the grounding electrode is a rotatable roll.
13. (new) The method of claim 11 wherein the grounding electrode is a stationary platy electrode.

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14. (new) A method for coating a web in a dry surface treatment process comprising the steps of:

pre-charging particles of a dry powder by causing the dry powder to move along the walls of a transfer pipe to charge the particles by triboelectric charging;

supplying the pre-charged particles to a feeding nozzle forming an electrode and blowing the pre-charged particles from the feeding nozzle toward the web, the feeding nozzle being positioned between a first electrode producing a corona discharge upstream of the feeding nozzle and a second electrode producing a corona discharge downstream of the feeding nozzle, wherein the feeding nozzle is spaced from the paper or board web a first distance, and wherein the first electrode and the second electrode are spaced from the paper or board web a distance which is less than the first distance;

wherein the paper or board web is backed by a grounding electrode at a potential which is lower than or opposite to the potentials of the feeding nozzle, the first electrode, and the second electrode, and wherein the feeding nozzle, the first electrode, and the second electrode are located on a side of the paper or board web opposite the grounding electrode.

15. (new) The method of claim 14 wherein the grounding electrode is a rotatable roll.

16. (new) The method of claim 14 wherein the grounding electrode is a stationary platy electrode.